

REMARKS

Claims 7-23 are active in the present application.

The rejection of Claims 7, 8, and 10-11 under 35 U.S.C. § 102(b) over McQuillen et al is obviated by the present amendment.

The claimed *E. coli* strains claimed in Claims 7, 8, 10-11, and 23 are not the same as the McQuillen et al *E. coli* for the reasons of record, which are further explained hereinbelow.

The present invention provides, in part, an isolated *Escherichia coli*, which has an ability to produce and accumulate arginine in a medium when the bacterium is cultivated in the medium, and which is *modified to have an enhanced ability to utilize acetate*, whereby the ability to produce arginine is enhanced compared to the unmodified bacterium (see Claim 7). McQuillen et al discloses *E. coli* strain B, which is a wild type strain (see page 81, "Methods", line 1). However, McQuillen et al do not disclose or suggest making a mutant *E. coli* strain or modify a wildtype *E. coli* so that it may utilize acetate as in Claim 7.

Applicants point out that a wild type *E. coli* are unable to utilize acetic acid or acetate as the sole carbon source or which has been modified to utilize acetate. Applicants direct the Examiner's attention to *E. coli* strain 237 noted in the specification on page 8, line 14-19, which was unable to utilize acetic acid or acetate as a sole carbon source on an agar medium to grow or form colonies within two days at 37°C (see page 9, lines 1-6). In contrast, a mutant strain which was modified to have an ability to utilize acetate (e.g., strain 382), does have this ability. Therefore, the disclosure of McQuillen et al fails to anticipate the presently claimed invention.

Furthermore, the Examiner asserts: "The burden is on Applicant to show that the reference microorganism does not absolutely produce arginine in a medium containing acetic

acid or acetate as the lone source. The instant specification only indicates that the strain on page 8 grows poorly but there is absolutely no indication that no arginine was produced." (page 6, lines 5-9 of paper number 11). However, present claim 7 recites, in part: "whereby the ability to produce arginine is *enhanced compared* to the unmodified bacterium."

Applicants have shown adequate data to support this additional distinction between the presently claimed invention and the disclosure of McQuillen et al.

Moreover, the growth medium used to culture the *E. coli* strain in McQuillen et al contained significant amounts of glucose as the carbon source (see page 82, line 1), which is different from those bacteria claimed in, for example, Claims 8 and 9, which recite that the *E. coli* can grow on an agar medium using acetic acid or acetate as a sole carbon source.

The Examiner's attention is drawn to Table 2 on page 11 and Table 3 on page 12, which are reproduced below for the Examiner's convenience:

Table 2

Strain	Arginine (g/L)
237 (parent)	5.1
382 (acetate utilizing mutant)	12.0
383 (acetate utilizing mutant)	7.7

Table 3

Strain	Arginine (g/L)	Yield from glucose (%)
237 (parent)	4.5	5.2
382 (acetate utilizing mutant)	19.3	23.9

As is clearly evident above, the wild type 237 strain was unable to utilize acetate as the sole carbon source in producing L-arginine compared to bacterial strains, which had been

modified to utilize acetate as the sole carbon source (strain 382).

Therefore, it is clear that the *E. coli* of McQuillen et al is not the same as those *E. coli* claimed, and therefore the present claims are not anticipated by the disclosure of McQuillen et al. Withdrawal of this ground of rejection is requested.

The rejection of Claims 7-8 and 10-11 under 35 U.S.C. § 112, first paragraph, is traversed.

As stated in the Amendment and Request for Reconsideration, filed on July 18, 2002:

"As this rejection may apply to the present claims, Applicants note that deposit receipts for the deposited strains FERM BP-7925 and FERM BP-7926 were filed on June 22, 2001. These strains are specifically identified on page 8, lines 14-19 and page 9, lines 11-16. As noted on those pages, those strands have been deposited under the terms of the Budapest Treaty. In accordance with such deposit, Applicants submit that all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of a patent."

At page 4, lines 5-15 of paper number 11, the Examiner has required the addition of the identifying information set forth in 37 C.F.R. §1.809(d) to the specification. 37 C.F.R. §1.809(d) requires inclusion of the following information:

- (1) The accession number for the deposit;
- (2) The date of the deposit;
- (3) A description of the deposited biological material sufficient to specifically identify it and to permit examination; and
- (4) The name and address of the depository.

Applicants submit that no further amendment is necessary, since this information is already in the specification. Specifically, Applicants point to page 5, 11-18 which provides the depository, date of deposit, and the accession number. In addition, Applicants point to Example 1 (page 8, line 4 to page 9, line 16), which fully describes characteristics of the deposited *E. coli* cell strains. In particular, these strains have an ability to produce and accumulate arginine in a medium when the bacterium is cultivated in the medium, and which

is modified to have an enhanced ability to utilize acetate, whereby the ability to produce arginine is enhanced compared to the unmodified bacterium. Moreover, this information has been added to Claim 7. Therefore, Applicants submit that the present claims are drawn to a deposited material, as such the Examiner would be able to compare the presently claimed invention to any prior art. In fact, the Examiner has already compared the present invention to the prior art (i.e., McQuillen et al.).

Withdrawal of this rejection is requested.

With respect to the non-elected claims drawn to methods of producing arginine (Group III, see Claims 15-22), Applicants request that upon finding that the elected group is found to be allowable (Claims 7-14), the corresponding non-elected process claims should be rejoined in accordance with MPEP § 821.04.

Applicants submit that the present application is now ready for allowance. Early notification of such allowance is kindly requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Norman F. Oblon  
Attorney of Record  
Registration No. 24,618

Vincent K. Shier, Ph.D.  
Registration No. 50,552



**22850**

(703) 413-3000  
Fax #: (703)413-2220  
NFO:VKS  
E:209870US-amend-af.wpd

MARKED-UP COPY

IN THE CLAIMS

Please amend the claims as follows:

7. (Amended) An isolated *Escherichia coli*, which has an ability to produce and accumulate arginine in a medium when the bacterium is cultivated in the medium, and which is modified to have an enhanced ability to utilize acetate, whereby the ability to produce arginine is enhanced compared to the unmodified bacterium.

8. (Amended) [An] The isolated *Escherichia coli* [which] according to claim 7, wherein the bacterium has an ability to produce and accumulate arginine in a medium when the bacterium is cultivated in the medium, and which forms a colony within 2 days at 37°C when the bacterium is cultivated on an agar medium containing acetic acid or acetate as a sole carbon source.

--23. (New)--